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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/732,950 | 12/11/2003 | David Jia Chen | ROC920030250US1 | 9248 |

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| EXAMINER |
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MALSAWMA, LALRINFAMKIM HMAR

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| ART UNIT | PAPER NUMBER |
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2823

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/732,950

Applicant(s)

CHEN ET AL.

Examiner

Lex Malsawma

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Dec. 11, 2003 through April 6, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 7 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-6, drawn to a decoupling capacitor, classified in class 257, subclass 532+.
 - II. Claims 7-8, drawn to a method for determining the number and position of contacts in a decoupling capacitor, classified in class 716, subclass 8.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the capacitor of Group I could be made by a process different from that in Group II. For example, the capacitor of claim 1 could be formed without a process step for determining a minimum distance K, as required in claims 7 and 8, i.e., the capacitor in claim 1 could be formed by determining an average distance K necessary to achieve a substantially low sheet resistance (instead of the minimum distance and minimum sheet resistance required by claims 7 and 8).
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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4. During a telephone conversation with Mr. James Nock (Reg. No. 42,937) on February 8, 2005, a provisional election was made without traverse to prosecute the invention of Group I, claims 1-6. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7-8 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

6. Claim 2 is objected to because of the following informalities:

In claim 2, lines 9 and 13, "polysilicon gate" should read "polysilicon layer", otherwise there would be a lack of antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Suzuki** (5,598,029).

Regarding claim 1:

Suzuki discloses a decoupling capacitor (Fig. 4), comprising:

a fixed resistance in series with said capacitor, said capacitor formed by a polysilicon layer 4 and a diffusion layer (8 and/or 9), said fixed resistance formed by contacts (TH1a,1b,2a,2b, etc.) connecting said polysilicon layer 4 to a first voltage level buss 1 (i.e., power supply line, Col. 4, lines 49-50) and said diffusion layer to a second voltage level buss 2 (i.e., ground line, Col. 4, lines 49-50); and

said capacitor able to function at a frequency sufficiently high to suppress noise on said first and second busses to a value which achieves bus stability (note Col. 2, lines 10-16 and Col. 5, lines 24-33). Note that terminology such as “sufficiently high” is relative; accordingly, Suzuki’s capacitor is capable of functioning at a “sufficiently high frequency” to suppress noise,

since “a sufficiently high frequency” could be any frequency that one chooses to quantify as “sufficiently high”.

Suzuki **lacks** specifying defect current, accordingly, Suzuki does not specifically disclose the contacts being of location and quantity for limiting defect current. However, it is important to note that this limitation (as presented in the current claim) provides no quantifiable characteristic of the claimed decoupling capacitor. In other words, although Suzuki does not specifically disclose/recite such features with respect to the contacts, one of ordinary skill in the art could readily attribute such features to Suzuki’s capacitor because the recited limitations/features are essentially generalized statements that do not provide (or add) any specify structural limitations, which could patentably distinguish over Suzuki’s capacitor. In other words, Suzuki’s capacitor already provides a structure comprising contacts being of location, quantity, and capable of limiting defect current while suppressing noise at a “sufficiently high frequency”. In sum, the instant claim is held obvious over Suzuki because the only essential modification of Suzuki necessary to arrive at the current claim is to specifically recite an essentially generalized statement that is readily attributable to Suzuki’s decoupling capacitor.

Regarding claims 2-6:

Suzuki discloses the contacts (TH1a, 1b, 2a, 2b, etc., note Fig. 4) include a first set of contacts (TH1b, TH2b) to a first voltage (ground) and a second set of contacts (TH1a, TH2a) to a second voltage (power);

a defect leakage current limiting path (e.g., note the “inversion layer” region of the substrate under gate oxide 3, i.e., note Fig. 4 and Col. 5, lines 27-33) including said first set and

said second sets of contacts separated by a distance optimized (i.e., this would be any distance, since an “optimized distance” is relative to one’s definition of “optimum” for a given design) to cause a defect shorting said polysilicon layer 4 to said substrate 20 to force defect current to travel from the first set of contacts (TH1b, TH2b) through a section of the substrate (i.e., the “inversion layer”), then to the polysilicon 4 through any defects (in the gate oxide 3), and then along the rest of the polysilicon layer 4 to said second set of contacts (TH1a, TH2a).

Suzuki **lacks** specifying features specified in claims 3-6, including the following: preselected minimum and maximum resistance values, preselected maximum leakage current, preselected decoupling RC factor, total contact resistance being less than 10 % of combined sheet resistance, bandwidth limiting resistance of $R/2$, technology-dependent number of contacts, etc.. These features (as specified in claims 3-6) are all considered to be generalized statements that are readily attributable to Suzuki’s capacitor. In other words, the limitations in the instant claims are all directed to relative terminology, where the relative terms provide no specific, quantifiable, additional structural limitations to a capacitor structure that would patentably distinguish over Suzuki’s capacitor structure. For example, claim 4 recites, “*first and second sets of contacts in sufficient number to effectively achieve total contact resistance less than 10% of combined sheet resistance...*”. Essentially, this claim does NOT further limit the structure of the capacitor in claim 3, which already has first and second sets of contacts. More specifically, terminology such as “*sufficient number*” and “*total contact resistance less than 10% of total sheet resistance*” can only be interpreted to mean “any number” (i.e., any number can be a “sufficient number”) and “any resistance value” (i.e., since the “sheet resistance” has not been quantified and therefore could be any value, “10% of any value” is essentially “any value” that

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one chooses); therefore, the limitations recited in the instant claims are considered to be general statements that are readily attributed to Suzuki's capacitor structure. In sum, the instant claims are held obvious over Suzuki because Suzuki's capacitor structure contains all pertinent structural limitations necessary for one of ordinary skill in the art to attribute the generalized features recited in the instant claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The references listed on the attached Form PTO-892 (not cited above) are cited to show capacitor structures having features similar to those of the current invention.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lex Malsawma whose telephone number is 571-272-1903.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lex Malsawma *LM*

March 3, 2005

Olik Chaudhuri
OLIK CHAUDHURI
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